

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

MAURICE S. BROOKHART, ET AL.

CASE NO: CR9608 US CNT 2

APPLICATION NO.: UNKNOWN

GROUP ART UNIT: UNKNOWN

FILED: HEREWITH

EXAMINER: UNKNOWN

FOR: POLYMERIZATION OF OLEFINS

INFORMATION DISCLOSURE STATEMENTAssistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In compliance with 37 CFR 1.97 and 1.98, Applicants bring to the attention of the U.S. Patent and Trademark Office information listed on the enclosed PTO-1449. A copy of the information is also enclosed.

Applicants also bring to the attention of the Patent and Trademark Office the following U.S. Applications:

Application No.Filing Date

09/496,105

February 1, 2000

09/514,880

February 29, 2000

09/644,167

August 24, 2000

08/899,002

July 10, 1997

09/660,578

September 12, 2000

Should any fee be required in connection with the filing of this Information Disclosure Statement, please charge such fee to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company).

Respectfully submitted,

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Dated:

Oct 20, 2003

Form PTO-1449 (Reproduced)			Docket Number (Optional) CR9608 US CNT Z		Application Number	
INFORMATION DISCLOSURE CITATION IN AN APPLICATION <i>(Use several sheets if necessary)</i>			Applicant MAURICE S. BROOKHART, III, ET AL.			
			Filing Date HEREWITH		Group Art Unit	
U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,140,439	10/31/00	Brookhart, et al.	526	308	
	6,107,422	08/22/00	Wang, et al.	526	243	
	6,034,259	03/07/00	Brookhart, et al.	556	137	
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	0 381 495	01/02/90	Europe	C08F 10/00	C08F 4/80	
	0 454 231 A2	18/04/91	Europe	C08F 4/70	C08F 10/00	
OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>						
	D. E. Axelson, et al., A Quantitative Analysis of Low-Density (Branched) Polyethylenes by Carbon-13 Fourier Transform Nuclear Magnetic Resonance at 67.9 MHz, <i>Macromolecules</i> , 12 , 41-52, 1979					
	T. Usami, et al., Fine-Branching Structure in High-Pressure, Low-Density Polyethylenes by 50.10-MHz ¹³ C NMR Analysis, <i>Macromolecules</i> , 17 , 1757-1761, 1984					
	J. P. Blitz, et al., The Characterization of Short Chain Branching in Polyethylene Using Fourier Transform Infrared Spectroscopy, <i>Journal of Applied Polymer Science</i> , 51 , 1, 13-20, 1994					
	E. Nordmeier, et al., The Molecular Structure of Low-Density Polyethylene. 1. Long-Chain Branching and Solution Properties, <i>Macromolecules</i> , 23 , 4, 1072-1076, 1990					
	F. A. Bovey, et al., C-13 NMR Observations of Chain Branching in Vinyl Polymers, <i>Polym. Preprs Am Chem Soc Div Polym Chem</i> , 20 , 2, 160-163, 1979					
	W. Keim, et al., Novel Nickel- and Palladium-Complexes with Aminobis(imino)phosphorane Ligands for the Polymerization of Ethylene, <i>Angew. Chem. Int. Ed. Engl.</i> , 20 , 116-117, 1981					
	V. M. Mohring, et al., Novel Polymerization of α -Olefins with the Catalyst System Nickel/Aminobis(imino)phosphorane, <i>Angew. Chem. Int. Ed. Engl.</i> , 24 , 1001-1003, 1985					
	Nishioka, et al., Assignment of Chain Branching..., <i>Bunseki Kagaku</i> , 29 , 11, 774-780, 1980					
	A. D. Ketley, et al., The 1,3-Polymerization of Propylene by Palladium Cyanide, <i>Polymer Letters</i> , 6 , 341-343, 1968					
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U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,916,989	06/29/99	Brookhart, et al.	526	348.6	
	5,891,963	04/06/99	Brookhart, et al.	525	326.1	

FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
	R. van Asselt, et al., Palladium Complexes Containing Rigid Bidentate Nitrogen Ligands as Catalysts for Carbon-Carbon Bond Formation, <i>Tetrahedron</i> , 50 , 2, 323-334, 1994
	R. van Asselt, et al., Isolation of Alkyl- and Acyl-palladium Complexes containing Rigid Bidentate Nitrogen Ligands by Stepwise Successive Insertion of CO and Alkenes, <i>J. Chem. Soc. Chem. Commun.</i> , 15 , 1203-1205, 1993
	R. van Asselt, et al., Insertion of Carbon Monoxide and Alkenes in Palladium-Carbon Bonds of Complexes Containing Rigid Bidentate Nitrogen Ligands: The First Example of Isolated Complexes in Stepwise Successive Insertion Reactions on the Way to Polyketones, <i>J. Am. Chem. Soc.</i> , 116 , 3, 977-985, 1994
	R. van Asselt, et al., Synthesis and characterization of rigid bidentate nitrogen ligands and some examples of coordination to divalent palladium. X-ray crystal structures of bis(<i>p</i> -tolylimino)acenaphthene and methylchloro[bis(<i>o</i> , <i>o'</i> -diisopropylphenyl-imino)acenaphthene]palladium(II), <i>Recl. Trav. Chim. Pays-Bas</i> , 113 , 2, 88-98, 1994
	R. van Asselt, Stabilization of High Oxidation States by Rigid Bidentate Nitrogen Ligands; Synthesis and Characterization of Diorgano- and Triorganopalladium(IV) and Cationic Triorganoplatinum(IV) Complexes, <i>Organometallics</i> , 13 , 2, 706-720, 1994
	M. Svoboda, et al., Diazadien-Nickel-Alkyle, <i>J. Organometal Chem</i> , 191 , 1, 321-328, 1980
	N. Alberola, et al., Mechanical γ and β Relaxations in Polyethylene-I. Glass Transitions of Polyethylene, <i>Eur. Polym. J.</i> , 28 , 8, 935-948, 1992
	E. W. Fischer, et al., Effect of Filtration Conditions on the Apparent Density of the Intercrystalline Layers of Polyethylene Single Crystal Mats, <i>Polymer Letters</i> , 7 , 307-311, 1969
	David R. Burfield, et al., Differential Scanning Calorimetry Characteristics of Polypropylene. Dependence of Tg on Polymer Tacticity and Molecular Weight, <i>Macromolecules</i> , 16 , 702-704, 1983
	Piet W. N. M. van Leeuwen, et al., Migration versus Insertion in Square-Planar Platinum and Palladium Complexes, <i>J. Am. Chem. Soc.</i> , 116 , 12117-12118, 1994
	Heindirk tom Dieck, et al., Rigid Phenyl-Group Conformation in Complexes, <i>Angew. Chem. Intl. Ed. Engl</i> , 19 , 396-397, 1980
	Heindirk tom Dieck, et al., Synthesis of Chiral Diazadienes R* - N = CR' - CR' = N - R*, <i>Chem. Ber.</i> , 117 , 694-701, 1984
	K. Zemke, et al., Conformational Exchange near the Glass Transition: Two Dimensional ¹³ C NMR Study of Atactic Polypropylene, <i>Macromolecules</i> , 24 , 6874-6876, 1991
	J. C. Randall, et al., ¹³ C NMR microstructure determinations of low-density polyethylene homopolymers and copolymers, <i>Recl. Trav. Chim. Pays-Bas</i> , 110 , 543-552, 1991
	David R. Burfield, et al., Differential Scanning Calorimetry Characterization of Polypropylene. Dependence of Tg on Polymer Tacticity and Molecular Weight, <i>Macromolecules</i> , 16 , 702-704, 1983

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U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,886,224	03/23/99	Brookhart, et al.	564	272	
	5,880,323	03/09/99	Brookhart, et al.	585	527	

FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS.	TRANSLATION	
						YES	NO

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
	Jan Tecl, Studium vetveni polyethylenu nuklearni magnetickou resonancni spektroskopii, <i>Chemicky prumysl, roc.</i> , 37/62 , 196-200, 1987
	G. Natta, et al., Crystalline Alternating Ethylene-Cyclopentene Copolymers and Other Ethylene-Cycloolefin Copolymers, <i>Makromol. Chem.</i> , 54 , 95-101, 1962
	J. Boor, et al., Polymerization of Cyclopentene, 3-Methylcyclopentene, and 3-Methylcyclohexene, <i>Die Makromolekulare Chemie</i> , 90 , 26-37, 1966
	B. C. Anderson, et al., Polymerization of Internal Olefins, <i>Macromolecules</i> , 2 , No. 6, 686-687, 1969
	Walter Kaminsky, et al., Copolymerization of cycloalkenes with ethylene in presence of chiral zirconocene catalysts, <i>Makromol. Chem.</i> , 190 , 515-526, 1989
	W. Kaminsky, et al., in T. Keii, et al. Eds., Polymerization of Cyclic Olefins with Homogeneous Catalysts, <i>Catalytic Olefin Polymerization</i> , 929 , 425-438, 1990
	W. Mark Kelly, et al., Polymerization of Cyclopentene Using Metallocene Catalysts: Polymer Tacticity and Properties, <i>Macromolecule</i> , 27 , 4477-4485, 1994
	Alexej Jerschow, et al., Nuclear Magnetic Resonance Evidence for a New Microstructure in Ethene-Cyclopentene Copolymers, <i>Macromolecules</i> , 28 , 7095-7099, 1995
	Heindirk tom Dieck, et al., Diazadiene complexes of Group 4 metals I. Synthesis of mono-, bis- and tris(diazadiene) titanium complexes and the structure of diazadienedichlorotitanium, <i>Inorganica Chimica Acta.</i> , 177 , 191-197, 1990
	Heindirk tom Dieck, et al., Metallierung einer nichtaktivierten Alkyl-Gruppe im Nickelkomplex 1, <i>Chem. Ber.</i> , 109 , 1657-1664, 1976
	Lynda K. Johnson, et al., New Pd(II)- and Ni(II)-Based Catalysts for Polymerization of Ethylene and α -Olefins, <i>J. Am Chem. Soc.</i> , 117 , 6414-6415, 1995
	Lynda K. Johnson, et al., Copolymerization of Ethylene and Propylene with Functionalized Vinyl Monomers by Palladium(II) Catalysts, <i>J. Am. Chem. Soc.</i> , 118 , 267-268, 1996

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U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,208,309	05/04/93	McDaniel, et al.	526	348	
	4,150,208	04/17/79	Hwang	526	96	
	5,880,241	03/09/99	Brookhart, et al.	526	348	

FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION	
						YES	NO
	WO 93/13140	12/21/92	PCT	C08F	4/602		
	0 446 013 A2	03/05/91	Europe	C08F	10/02		
	2 058 094 A	09/05/80	UK	C08F	210/16		
	0 356 692 A2	07/21/89	Europe	C08F	210/02		
	0 361 363 A2	09/25/89	Europe	C08F	210/02		
	WO 94/12699	11/10/93	PCT	D01F	6/30		
	0 378 248	02/12/86	Europe	C08F	10/04		
	0 475 307 A1	09/06/91	Europe	C08F	110/06		

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
	PCT/US 96/01282 International Search Report dated 21 October 1996
	Johnson, et al., New Pd(II)- and Ni(II)-Based Catalysts for Polymerization of Ethylene and α -Olefins, <i>J. Am. Chem. Soc.</i> , 117 , 6414-6415, 1995
	Johnson, et al., Copolymerization of Ethylene and Propylene with Functionalized Vinyl Monomers by Palladium (II) Catalysts, <i>J. Am. Chem. Soc.</i> , 118 , 267-268, 1996
	Saito, et al., Diethyldipyridylnickel. Preparation, Characterization, and Reactions, <i>J. Am. Chem. Soc.</i> , 88:22 , 5198-5201, 1966
	Bartolini, et al., Enantioselective isotactic alternating copolymerization of styrene and 4-methylstyrene with carbon monoxide catalyzed by a cationic bioxazoline Pd(II) complex, <i>Macromol. Rapid Commun.</i> , 16 , 9-14, 1995
	Jiang, et al., Stereo- and Enantioselective Alternating Copolymerization of α -Olefins with Carbon Monoxide. Synthesis of Chiral Polymers, <i>Macromolecules</i> , 27 , 2694-2700, 1994
	Brookhart, et al., Polymers with Main-Chain Chirality. Synthesis of Highly Isotactic, Optically Active Poly(4- <i>tert</i> -butylstyrene- <i>alt</i> -CO) Using Pd(II) Catalysts Based on C ₂ -Symmetric Bisoxazoline Ligands, <i>J. Am. Chem. Soc.</i> , 116 , 3641-3642, 1994
	Diercks, et al., Katalytische Cyclotetramerisierung von Propiolsäureestern, <i>Chem. Ger.</i> , 118 , 428-435, 1985
	Dierck, et al., Diazadienes as Control Ligands in Catalysis Part 12.* The Nickel-Catalyzed Cyclotetramerization of Propargylic Alcohol to Substituted Cyclooctatetraenes and the Structure of 1,3,5,7-Tetrakis(Hydroxymethyl)Cyclooctatetraene, <i>Journal of Molecular Catalysis</i> , 35 , 317-328, 1986

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4,123,602	10/31/78	Ukihashi, et al.	526	206	
	3,503,945	03/31/70	Kim	260	89.3	
	3,505,301	04/07/70	Natta, et al.	260	80.78	
	3,927,137	12/16/75	Bryson	260	680 B	
	5,204,429*	04/20/93	Kaminsky	526	308	
	5,866,663	02/02/99	Brookhart, et al.	526	170	

FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION	
						YES	NO
	2 355 854	06/22/77	France (Abstract)	C08F	4/78		
	113 763	08/09/74	Deutsche (Abstract)	C08F	1/76		
	WO 92/12162	12/26/91	PCT	C07F	7/00		
	0 193 202 A2	09/03/86	Europe	C08F	14/18	X	
	1,034,197	06/29/66	Great Britain	C 07 C	143/00		
	0 504 418 A1	09/23/92	Europe	C08F	210/00		
	0 304 671 A1*	03/01/89	Europe	C08F	32/04		X

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
	PCT International Search Report dated 10/21/96 for PCT/US96/01282 (CR-9608-D)
	"MONTECATINI" SOCIETA GENERALE PER L'INDUSTRIA MINERIA E CHIMICA: "Catalytic Manufacture of Olefin Copolymers with Three or More Monomer Components", <i>Chemical Abstracts</i> , 77, No. 8, 1972, Abstract no. 49803t
	Scott Collins & W. Mark Kelly, The Microstructure of Poly(cyclopentene) Produced by Polymerization of Cyclopentene with Homogeneous Ziegler-Natta Catalysts, <i>Macromolecules</i> , 25, 233-237, 1992
	Wissing, e et al., Influence of bulky substituents on the regioselective group-transfer reactions of diorganozinc compounds with N,N'-bis(2,6-di-isopropenyl)-1,4-diaza-1,3-butadiene, <i>Chemical Abstracts</i> , 121, no. 11, 1055, 1994, Abstract no. 134322g
	Christina Munz, Constantin Stephan and Heindirk tom Dieck, Diazadiene-stabilized palladacyclopent-2-enes and the catalytic addition of various allylic systems to dimethyl acetylenedicarboxylate, <i>Journal of Organometallic Chemistry</i> , 407, 413-420, 1991
	Werner Bonrath, Klaus R. Pörschke, Richard Mynott and Carl Krüger, Synthesis and Structure of Ni(2,6- ^t Pr ₂ C ₆ H ₃ N=CH-CH=NC ₆ H ₃ -2,6- ^t Pr ₂) ₂ , <i>Zeitschrift Für Naturforschung</i> , 456, 1647-1650, 1990

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----------	-----------------

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*U.S. Patent Number 5,204,429 is equivalent to 0 304 671 A1 Europe.

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	5,565,521	10/15/96	Effler, Jr., et al.	525	146	5/25/95
	5,272,236	12/21/93	Lai, et al.	526	348.5	
	4,761,328	08/02/88	Shin	428	220	
	3,265,622	08/09/66	Anderson	252	59	
	5,475,075	12/12/95	Brant, et al.	526	348.3	
	5,218,071	06/08/93	Tsutsui, et al.	526	348	
	4,359,561	11/16/82	Fraser, et al.	526	88	
	4,424,330	01/03/84	Raviola	526	348	
	4,857,611	08/15/89	Durand, et al.	526	88	
	5,318,849	06/07/94	Mehalla, et al.	428	407	
	4,001,195	01/04/77	Wyatt	526	348	
	4,506,061	03/19/85	Makino, et al.	526	142	
	5,134,209	07/28/92	Job, et al.	526	141	

FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION	
						YES	NO
	J06168625 A	06/14/94	Japan (Abstract)	C08L	23/02	X	
	DE 3906434 A1	09/06/90	Deutschland (Abstract)	C07B	37/02		
	WO 97/17380	05/15/97	PCT	C08F	10/00		

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
	Emulsion Polymerization to Fibers, Manufacture, <i>Encyclopedia of Polymer Science and Engineering</i> , Volume 6, pages 385-387, Copyright 1986
	Editors: Barbara Elvers, Stephen Hawkins, Gail Schulz, <i>Plastics, Properties and Testing to Polyvinyl Compounds, Ullmann's Encyclopedia of Industrial Chemistry</i> , Volume A 21, pages 488-493, 1992
	Polymer Technology Dictionary, Tony Whelan MSc, Consultant, Chapman & Hall, 1994, pp1, 282, 312

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